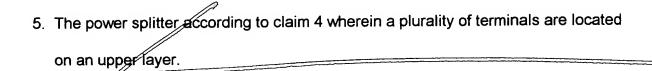
Claims

What is claimed is:

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- . A power splitter comprising.
- a) a substrate having a plufality of layers;
- b) a resistor formed on one of the layers;
- c) a capacitor formed between two of the layers;
- d) a transformer attached to the substrate and electrically connected to the resistor and capacitor the transformer providing impedance matching and dividing; and
- e) a plurality of vias extending between the layers for providing electrical connections between the resistor, capacitor and transformer.
- The power splitter according to claim 1 wherein the substrate is formed from layers of low temperature co-fired ceramic.
- 3. The power splitter according to claim 1 wherein the transformer has a binocular core and a plurality of windings.
- 4. The power splitter according to claim 3 wherein the transformer is attached to the substrate using an epoxy.



- The power splitter according to claim 5 wherein the windings are electrically connected to the terminals by a plurality of welds.
- 7. The power splitter according to claim 1 wherein the substrate is connected to a printed circuit board by a reflowed solder paste attached to a conductive pad on a bottom layer.
- 8. The power splitter according to claim 1 wherein the capacitor has one electrode formed on one layer and another electrode formed on another layer.
- The power splitter according to claim 1 wherein at least two of the power splitters are cascaded.
- 10. The power splitter according to claim 9 wherein two power splitters are cascaded to form a 4-way power splitter.
- 11. The power splitter according to claim 9 wherein four power splitters are cascaded to form a 8-way power splitter.

- 12. A power splitter for providing impedance matching and dividing, the power splitter having an input port and a first and second output port, the power splitter comprising:
- a) a multi-layered low temperature co-fired ceramic substrate, the substrate having a top surface and a bottom surface;
- b) a plurality of terminals located on the top surface;
- c) a transformer attached to the upper surface and electrically connected to the terminals; and
- d) a plurality of vias extending through the substrate for providing an electrical connection between the terminals and the bottom surface.
- 13. The power splitter according to claim 12 wherein a resistor is formed on the top surface and is electrically connected between the first and second output ports.
- 14. The power splitter according to claim 12 wherein a capacitor is formed on the substrate and is electrically connected between the transformer and a ground connection.
- 15. The power splitter according to claim 12 wherein the transformer has a binocular core and a plurality of windings.

- 16. The power splitter according to claim 12 wherein the transformer is attached to the substrate using an epoxy.
- 17. The power splitter according to claim 15 wherein the windings are electrically connected to the terminals by a plurality of welds.
- 18. The power splitter according to claim 12 wherein the substrate is connected to a printed circuit board by a reflowed solder paste attached to a conductive pad on the bottom surface.
- 19. The power splitter according to claim 12 wherein the capacitor is formed by a pair of electrodes having a layer of the low temperature co-fired ceramic therebetween, the electrodes each connected to a via.
- 20. The power splitter according to claim 12 wherein at least two of the power splitters are cascaded into a higher order splitter.
- 21. The power splitter according to claim 20 wherein three power splitters are cascaded to form a 4-way power splitter.
- 22. The power splitter according to claim 20 wherein seven power splitters are cascaded to form a 8-way power splitter.

- 23. A method of manufacturing a power splitter comprising the steps of:
- a) providing a plurality of layers of low temperature co-fired ceramic;
- b) punching a plurality of holes in the low temperature co-fired ceramic layers;
- c) filling the holes with a conductive material to form a plurality of vias;
- d) screening a plurality of circuit features onto the layers;
- e) stacking the layers;
- f) firing the stacked layers in an oven to form a unitary substrate; and
- g) attaching a transformer to the substrate.
- 24. The method according to claim 23 wherein the circuit features are chosen from the group consisting of:
- a) resistors;
- b) capacitors;
- c) circuit lines;
- d) terminals; and
- e) resistor overglaze.
- 25. The method according to claim 23 wherein the transformer has a plurality of wire windings, the wire windings being welded to the terminals.
- 26. The method according to claim 23 wherein the transformer is attached to the substrate using an adhesive.

- 27. The method according to claim 26 wherein the transformer has a binocular core, the windings wound around the core so as to form an input port and a pair of output ports.
- 28. The method according to claim 23 wherein the substrate is attached to a printed circuit board, further comprising the steps of:
- a) screening a solder paste onto a bottom surface conductive pad;
- b) placing the substrate onto the printed circuit board; and
- c) reflowing the solder paste such that the substrate is attached to the printed circuit board.